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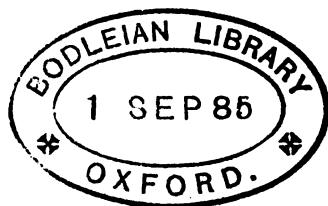
Critical Remarks  
UPON THE  
MISSTATEMENTS AS TO INTERDENTAL SPLINTS  
IN THE  
SURGICAL TREATISE  
OF  
PROFESSOR D. HAYES AGNEW, M. D.  
BY  
THOMAS BRIAN GUNNING, D. D. S.,  
NEW YORK.

Reprinted from the New England Journal of Dentistry  
April, 1884.

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# REMARKS.

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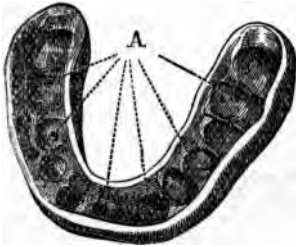
34 East 21st Street,  
New York, November 26, 1883.

TO D. HAYES AGNEW, ESQ., M. D., L. L. D., Professor of Surgery in  
the Medical Department of the University of Pennsylvania.

SIR: In the preface to your recently completed work, "The Principles and Practice of Surgery," you say: "In the composition of its pages, while I have expressed my own views independently on all subjects, I have also endeavored, as far as was consistent with the scope and limits of the work, to record those of other writers, not only that the student and the practitioner may be made familiar with the literature of their profession, but also that they may be able in their observation and practice to contrast different plans of treatment, and in this way draw their own conclusions in regard to the relative merits of the various modes of managing surgical disease. Whatever may be the defects of the work—and none can be more sensible of these than myself—I have endeavored most conscientiously to furnish a safe and reliable guide for the surgical practitioner."

With this in view, those for whose instruction you wrote could not suspect that the work contains statements which are untrue, and mislead in regard to the treatment of any important injury. Yet the section on "Fractures of the Inferior Maxillary Bone" contains such statements. To give a clear understanding of the matter to you, and to all who may read this letter, I quote from your article verbatim and remark upon the misrepresentations. In Vol. I., page 846, you refer to the interdental splints devised by me and used in treating fractures of the maxilla, as follows:

"Among the simplest of Gunning's splints are the forms shown in Figs. 642 and 643, which receive all the teeth of the lower jaw,



**Fig. 642.**

Gunning's Interdental Splint. A points to perforations for injecting water.



**Fig. 643.**

Gunning's Interdental Splint.

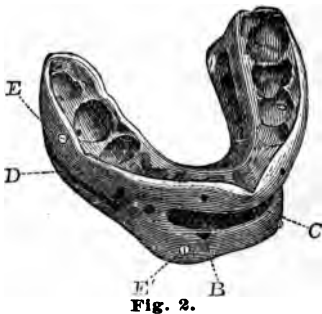
extend a short distance over the gum, and have perforations through which to throw a stream of liquid for the purpose of cleanliness. This splint when placed in position forms a cap, and is kept in place by securing the jaws together with a bandage, or by means of screws passed between the teeth."

Now my splint No. 1 (your figure 642), was expressly devised to be used without a bandage; it holds the fragments of the jaw in place by means of the teeth without anything external to the mouth, and it allows the jaw to move and to be used in eating and speaking; and this form of splint is adapted to the large proportion of fractures of the maxilla. If the patient can be depended on, never, however, if a child, this splint may in many cases only be fitted to the teeth, and without screws in or between the teeth, or any ligatures, the fragments of the jaw will be held firmly together. For in eating or in closing the splint against the upper teeth the muscles carry the broken jaw up and keep the fragments in place, the muscles and the surrounding soft parts forming a counter support to the interdental splints.

This splint, No. 1, was first applied on February 12, 1861. It was used on the jaw of a Spanish seaman in the naval hospital, New York, and it cured the patient, although he had been subjected to four months' unsuccessful effort of the government surgeons, assisted by others in the vicinity. Thus the surgeons were spared the mortification of sending the man home uncured. A similar splint was shown to the New York Academy of Medicine, January 7, 1863, with

another case in which it was used, then published with illustrations in their Bulletin, and in February brought before the Medical Society of the State of New York, as shown in the Transactions for 1863; and in the Medical Report of the Centennial Commission, 1876, this splint was admitted to be the first splint ever used without an appliance outside of the mouth. Surely this splint should have been fairly reported and truly described in your work on "The Principles and Practice of Surgery." Had this been done, other sufferers could have the use of it; whereas, your book misleads the surgeon and student in regard to it.

Even in the few injuries where the fractures are such that it is necessary to use the upper teeth as a base to hold the broken lower jaw still, as in fractures in the ascending rami, or say all fractures back of the teeth, my splint No. 2, just now shown, is not kept in place, as you say, by securing the jaws together with a bandage. This splint,

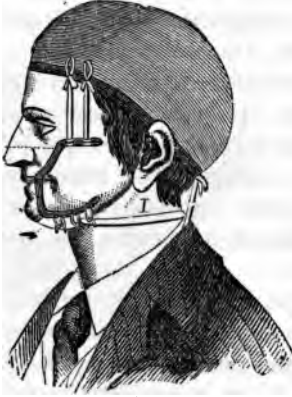


B, triangular opening, of which one side corresponds to the cutting edge of the lateral incisor, which tooth stood in the end of the fragment most displaced before the splint was applied. C, opening for food, speech, &c. D, channel for the saliva from parotid gland to enter the mouth, its fellow being seen on the other side of the splint. E, screw opposite lower canine tooth, head of the left screw being just discernable. E', head of screw opposite upper first molar tooth, end of its fellow being seen on the other side.\*

like No. 1, holds the fragments of the jaw by means of the teeth only, without any bandage; and while the patients wear this splint they may follow, as with No. 1, their usual occupations.

Of my splint, No. 3, you say: "A third splint of Dr. Gunning's, one which he uses in cases where the teeth have been lost, is formed by connecting steel branches with the interdental part of the apparatus, of which the upper branch passes along the superior part of the face, and the lower one along the outside of the lower jaw; these are kept in place by three bands, one being placed at the chin in order to hold the jaw up in the splint, one running from the metal band to the back of the neck, and one passing to a cap which is worn over the head, and with which the splint is connected."

\*This figure 2 was left out in the letter sent to Professor Agnew, but it is here shown in order that the reader may compare it with Dr. Agnew's figure 643, which is the same cut with the letters erased.

**Gunning's Interdental Splint.****Fig. 644.**

This is my plate 3, with its reference letters cut away, and your description leads the reader to suppose that a band of *metal* goes under the chin to hold the jaw up in the splint, and that metal bands are used instead of strings of tape to hold the splint by means of the cap and to keep a metal band from slipping over the chin. But no metal band is used anywhere nor spoken of by me. In the absence of teeth, the wings are used, two on each side, the upper range over the malar bones and the lower along the

jaw ; and from the cap on the head, tape strings pass down on each side to the upper wings and hold the splint against the upper gum, while the broken lower jaw is held up in the splint by a single thickness of linen or other thin material, which extends across under the chin from one lower wing to the other, while the lips, cheeks and all the face are left free from pressure.

This statement would place the splint plainly before your readers, and give them the use of it, for their patients, when they needed or preferred it. This description is also briefer than your deceptive text. Certainly this splint, No. 3 (your figure, 644), deserves fair notice, it having been successfully used on the bad fractures of the Hon. Wm. H. Seward subsequent to the attempt to assassinate him.

Surgeon General Barnes and Surgeon Basil Norris, of the army, together with Dr. Whelan, chief of the medical bureau of the navy, and others, had signally failed to secure by ligatures and bandages the fractures received in falling from his carriage, before the Secretary was cut so terribly on the night that President Lincoln was killed.

Further, I did not take charge of the case nor set the fractures until twenty-five days after the accident, fifteen after the attempt to kill him ; yet this splint with upper wings held the double and compound fractures of the jaw securely for sixty-eight days without a moment's intermission.

I described this splint, No. 3, to the New York Academy of Medicine, June 1, 1864, but the upper wings were never used until I applied them, May 2, 1865, in Mr. Seward's case.

Since then a severe fracture without a tooth in the mouth has been

successfully treated, in which both upper and also the lower wings were used. It was applied in May, 1879, to the jaw of a farmer, seventy years old, with such good result, by Dr. Adams Bishop, reported in *Johnston's Dental Miscellany*, Vol. VII., page 63, and in the *Independent Practitioner*, Vol. II., page 108. Thus the splint, No. 3, has been fully tested, for this patient's fracture could not be held by the bandages used by the physicians who first attended the case. I devised this splint for fractures without teeth to hold by, and it has proved to be a perfect control for such cases; for the Secretary of State attended to the duties of his office while wearing it, and the farmer walked around at once, and followed his plough and did heavy work before his splint was left off, although he wore it only six weeks.

The deception of your text in regard to my treatment of these injuries is made complete by leaving out my splint, No. 4, here shown.

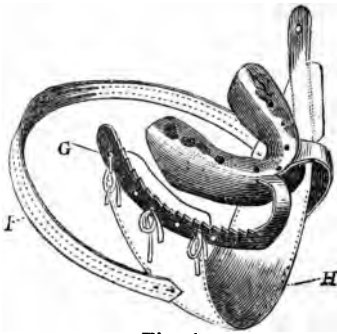


Fig. 4.

This splint, made of tin, and applied to the teeth of the fractured jaw by means of a lining of gutta-percha, or of plaster of Paris, was devised in 1863 for hospital use and for practitioners out of the reach of a dentist. It is cast with a handle in front, so that it is an impression cup such as dentists use, but when applied as a splint, the handle is cut off, and, if needed, wings are soldered on, and from these, when the splint

is worn, a single thickness of roller passes under the jaw from one wing to the other.

I reported this splint to the New York Academy of Medicine, June 1, 1864, in answer to their request and letter of thanks in 1863. Within the week after reading the paper, I applied this splint, No. 4, to the jaw of a boy under Dr. Freeman's treatment, and in July I used the *same* splint with a new lining on the jaw of a boy sent to me by Dr. King. The indentations shown in the cut represent those made by the upper teeth of both boys when eating.

These splints, Nos. 1, 2, 3, 4, with cases to explain and illustrate the treatment, are clearly shown in my paper on the Treatment of Fractures of the Lower Jaw by Interdental Splints, first published in full in the *New York Medical Journal*, in 1866; they are also dis-

tinctly and fairly shown in every edition of that unique work, *Injuries and Diseases of the Jaws*, by Christopher Heath, F. R. C. S., published by John Churchill & Son, London, and by Lindsay & Blakiston, Philadelphia. (This work is the Jacksonian Prize Essay of the Royal College of Surgeons of England for 1867.)

The splints are also described at length and favorably noticed in the Report of the Judges of Group XXIV. on Medicine, Surgery, and Prothesis, transmitted by the Secretary, J. H. Thomson, A. M., M. D., to Prof. Francis A. Walker, Chief of the Bureau of Awards, and edited by him for the U. S. Centennial Commission, and issued by your own Publishers, J. B. Lippincott & Co., Philadelphia, before your work, "*The Principles and Practice of Surgery*." In all these publications the splints are explained and illustrated by the same plates used in your articles upon "*Fractures of the Lower Maxilla*." But your book shows my plates with the reference letters cut away, except to the holes for syringing, and states that the splints are held in place by securing the jaws together with a bandage. Whereas, my interdental splints were expressly devised to obviate the use of these bandages, which are cumbersome, unreliable and often destructive. These splints are not, as you intimate, merely supplemental; each one is a complete and reliable support.

The first is for all injuries in which the fractured jaw is allowed in my methods to move naturally while under treatment, and by far the larger proportion of fractures can be thus treated.

The second splint is for fractures in which the broken jaw is held in fixed relation to the upper one; and in some of these cases this splint does not cover the front teeth, so that, when worn, it is unseen.

All the splints have small openings to allow observation of the teeth which are near the fractures, so that the position of the broken ends of the bone can be learned at any time without removing the splint; and in fractures in which the lower jaw is held in fixed relation to the upper one, the splint has channels for the saliva from the parotid glands to pass in around the tongue.

You leave these important devices unnoticed, and cut away the letters of reference, yet, in the text given (say seven lines) to my splints, 1 and 2, you twice remark upon keeping the splint clean, and twice say or suggest that they cover all the teeth of the lower jaw, and then leave your readers ignorant and misled in respect to the radical features of the splints. But, in less than the room given to the repetition, you could have told that these splints hold the frag-

ments of the bone in place securely, without anything outside the mouth ; are quite comfortable, and the patients attend to their business and move about as when their jaws are sound. They do this even when the fractures are so severe that the jaw is held in fixed relation to the upper teeth, for in such cases the opening in front affords room through which to speak and receive food. But in most fractures, as before stated, the jaw is allowed to move, and the top of the splint is used in eating.

The eight cases in my paper which show the complete control attained by means of these splints were carefully selected ; and with the four cuts spoken of in this letter, place my treatment, shown fully in 1866, at the service of all. Mr. Christopher Heath quotes from the *New York Medical Journal* and the *British Journal of Dental Science*, 1866, and his book shows my treatment clearly. In its appendix, case six, is my report verbatim of the Hon. Wm. H. Seward's case.

The official report of the United States Centennial Commission closes, in respect to my treatment of fractures of the maxillæ, as follows :

"In connection with the splints shown, was a series of casts illustrating the double-compound fracture of the jaw of the late Hon. William H. Seward, showing the jaw broken on both sides between the bicuspid teeth. Also a double cast of the upper and lower jaw as held by the splint for sixty-eight days. As no teeth were left in the upper jaw, the wings and cap were used, as shown in Fig. 3. The result was thoroughly satisfactory."

The Secretary, Dr. J. Henry Thompson, who transmitted this report of the Judges of Group XXIV., was a resident of Washington, where I treated the Secretary of State.

In addition to all this, your own city, Philadelphia, has in one of its prominent men a proof of the superiority of my treatment by splint over that by bandage, as used by Professor Buckingham of the Medical School of Harvard University. The fracture was received in the terrible stage accident in the White Mountains, in 1873, and the jaw, when the patient was brought to me, was so deformed that I had to break it apart. The splint was shown in the Centennial Exhibition of 1876, and the case is fully reported in the *Independent Practitioner*, Vol. I., page 526.

I have said that you leave out my splint 4 ; but, worse still, you place next after my Fig. 3 a splint which you show as Kingsley's, preceded by a description which ends as follows : "When applied,



the teeth occupy the cavities in the splint, the latter being kept in position by a strip of roller passing beneath the chin from one arm of the apparatus to the other."

Now this method, the splint and the wings (arms) were devised by me. The splint, with its wings, was shown on the patient to the New York Academy of Medicine, October 21, 1863. It was for showing this apparatus that the Academy passed the resolution thanking me, and requesting me to report further; and, in response to which, I read the paper, June 1, 1864, which explained my four splints. See Bulletin, Vol. II., pages 153, 168, 307.

Kingsley does not use the splint nor the roller, as you say, but applies a sub-mental splint or compress, which is by means of some apparatus or band kept in connection with the interdental splint, the broken jaw being between them, and he maintains that this is necessary. But for fracture at the angle of the jaw, or in the parts above, he says that an interdental splint is useless, and that a bandage is indicated; that is, a bandage around the jaw and head. Thus Kingsley uses appliances external to the mouth in all cases, although my interdental splint, which, by enclosing all the lower back teeth, holds in the angles of the jaw has been in use since February 12, 1861, his treatment of fractures of the jaw is no improvement upon that of twenty-five years ago. In fact, he advises for fracture in front of the jaw, that which is inferior to Hayward's plan of 1858, in which a metal cap was fitted to several teeth on each side of the fracture, and from the upper surface of the cap a stout wire went out of each corner of the mouth to a gutta-percha splint under the chin, and from beneath this a four-tailed bandage passed behind and over the head; thus the lower tails passed outside the angles, which could therefore be held in with pads. Whereas, Kingsley says: "If the fracture is in front, the splint need not cover all the back teeth; but if it be at the side, it is better to cover all the teeth of that side. It is also better to set the ends of the upper and lower jaws in an articulator, and thus make prints of the upper teeth in the wax, to be retained in the splint." But with the splint so cut off as not to enclose the back teeth, the angles will be forced out by the muscular traction on the inside of the chin, for the outside wings cannot be used beyond the ends of the splint, as they would lift it up from the front teeth. In fact, the muscular traction on the inside of the chin might alone wring the fractured ends out of the splint by forcing the latter up the outer surfaces of the canine or bicuspid teeth. Again,

if the splint only covered the teeth on the fractured side, then those of the other would have no bearing, and no eating could be done except on the splint over the fracture; and if the patient should happen to use the uncovered teeth on a large morsel, it might force the fractured ends apart, whether they were in the side or in the front of the jaw. Dr. Kingsley's examples of the application of this splint to double or triple fractures are quite as bad as his advice in regard to single fractures. All he shows of importance, was first devised, used and published by others before him; it is, as told by him, of little service to the reader, because of its intermixture with statements which are not in accord with the facts of history nor of science.

Yet your text is such as leads the reader to adopt his treatment and reject my methods—this, not because of any want of clearness in my description, for you could have quoted from my paper in the *New York Medical Journal*, Vol. III., page 434: "When a well-adapted splint is on the teeth and gum, the other parts around the bone are, to a great extent, a counter-support to the splint . . . . Meanwhile, the motions of the jaw are in most cases unrestricted, and the cheeks and lips always left free." Ibid, 442, "Fig. 1, is the representative splint for treatment of cases in the first class or those in which the jaw is left free. Fig. 2, for the second class, or those in which the jaw is held still."

Yet, with this plainly stated, you class these splints together, and say: "This splint, when placed in position, forms a cap, and is kept in place by securing the jaws together with a bandage, or by means of screws passed between the teeth." Your text, on page 847, confirms this, as follows: "The splint of Dr. Bean resembles closely that of Dr. Gunning." . . . "The splint, when applied, is kept in position by straps which pass over and around the head, and also behind the neck." Your text again misleads the student, for you admit that Bean's splint "is fitted to the teeth of both the upper and lower maxilla," in which cases my splint is screwed to the teeth, and while I use nothing outside the mouth, you lead the reader to suppose that I use a bandage around the jaw and head, and you do this, although my treatment of fractures, with the splint illustrated by Fig. 2 (your Fig. 643) is related in the *New York Medical Journal*, Vol. IV., page 16. In case five it is distinctly shown that the surgeon in Bellevue hospital who had charge of the woman, tried to hold the jaw up in the splint with Hamilton's bandage, but on the third day he requested me to screw the splint fast to the teeth, as the

bandage was painful and useless. The splint was screwed to the teeth, and the jaw united in forty days.

In January, 1861, Dr. Benjamin Franklin Bache, U. S. Navy, advised that I should be asked to treat a Spanish seaman, whose fractured jaw was found to be incurable at the Naval hospital, N. Y. Howard Hayward's method of treating these injuries was then the most advanced, and although it was very imperfect, did much to prepare the minds of surgeons to accept the co-operation of dentists, at least in Great Britain. After study of the literature of the subject, say as given for twenty-three centuries back, and then making careful allowance for the muscular action involved, I devised the splints and methods of applying them, which were fully published; and the correct action of the muscles which control the jaw was shown to guide the surgeon. This was necessary, as I demonstrated that the *external pterygoid* muscles depressed the jaw and opened the mouth, instead of the *digastrics*, as maintained by Hunter. I also explained that the lower jaw is the lever by which the head is held forward, so that, when the jaw is broken, it requires firmer control than can be given by appliances which rest upon the soft parts external to the mouth. In the years which have since passed, my experience has suggested nothing which I think necessary to perfect my treatment of fractures of the maxillæ.

You however do not show my splints and methods *fairly*, in order that your readers may contrast my plans with others, and judge of their relative merits, as the student is led to believe by your preface.

I trust that you have been yourself imposed upon, and that you will now and in the future, as far as possible, correct the wrong which has at present the sanction of your name. I am, Sir,

Yours respectfully,

THOS. BRIAN GUNNING.

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Philadelphia, 1611 Chestnut Street,  
December 1, 1883.

DR. THOMAS BRIAN GUNNING.

*Dear Dr.:* I am indebted to you for an accurate description of your interdental splints for fracture of the jaw, and shall with great pleasure make the correction in the next edition of my book, should it reach a second edition.

Very truly yours, etc.,

D. HAYES AGNEW.





